# **Realtek IoT/Arduino Solution**

Home Ameba Arduino Standard SDK Ask Questions Related Sites Ameba Arduino: Getting Started With RTL8195 Ameba Arduino v1.1.3 Standard SDK v3.4b3 LOGIN LANGUAGE: **Required Environment** 繁體中文 簡体中文 English Username 日本語 한국의 目前Ameba支援Windows XP/7/8 32位元/64位元,以 Password 及MAC OS作業系統。 並且使用 Arduino IDE 1.6.5 之後的版本。 VISITORS Remember Me 累計點擊:1,028,943 Introduction to Ameba Ameba是一張開發板,適合開發各式的感測器或物聯 Register | Lost your password? COMMUNITY 網應用。它上面的介面有Wifi, GPIO, NFC, I2C, UART, SPI, PWM, ADC, 這些介面可以接一些電子元件像是 LED燈、開闢、壓力計、溫濕度感測器、PM2.5粉塵感 購買 AMEBA RTL8195 開發板 測器等等。 這些資料可以經由內建的Wifi上傳到雲端,搭配手機的 App實現物聯網的實作。



### 購買 AMEBA RTL8710 開發板



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Ameba與Arduino Uno的大小差不多,圖中上方是 Ameba,下方則是Arduino Uno,Ameba的針腳與 Arduino Uno相容,Ameba右邊多了NFC天線,如果沒 用到NFC天線可以將右邊的板子裁掉。 Ameba使用Micro USB供電,一般的手機充電線就可以 用在Ameba上。

# Setting up Development Environment

Step 1. 安裝Driver

首先將Micro USB接上Ameba,另一端接上電腦:



第一次接上Ameba需要安裝USB驅動程式,Ameba使用標準的ARM MBED CMSIS DAP driver,你可以在這個地方找到安裝檔及相關說明:

https://developer.mbed.org/handbook/Windowsserial-configuration

在 "Download latest driver" 下載 "mbedWinSerial\_16466.exe" 並安裝之後,會在裝置管 理員看到mbed serial port:



## Step 2. 安裝Arduino IDE開發環境

Arduino IDE在1.6.5版之後,支援第三方的硬體,因此 我們可以在Arduino IDE上開發Ameba,並共享Arduino 上面的範例程式。在Arduino官方網站上可以找到下載 程式:

### https://www.arduino.cc/en/Main/Software

安裝完之後,打開Arduino IDE,為了讓Arduino IDE找 到Ameba的設定檔,先到 "File" -> "Preferences"

💿 sketch_dec03a   Arduino 1.6.6	
File Edit Sketch Tools Help	
New Ctrl+N	-Q:
Open Ctrl+O	
Open Recent 🕨	<u>⊾</u>
Sketchbook 🕨	^
Examples •	run once:
Close Ctrl+W	
Save Ctrl+S	
Save As Ctrl+Shift+S	
Page Setup Ctrl+Shift+P	run repeatedly:
Print Ctrl+P	
Preferences Ctrl+Comma	
Quit Ctrl+Q	
	-
	Arduino Ameba on COM7

然後在 Additional Boards Manager URLs: 填入:

https://github.com/Ameba8195/Arduino/raw/master/releas
e/package_realtek.com_ameba_index.json
1

Arduino IDE 1.6.7以前的版本在中文環境下會有問題, 若您使用1.6.7前的版本請將"編輯器語言"從"中文(台 灣)" 改成 English。在Arduino IDE 1.6.7版後語系的問題 已解決。

Settings Networl		
Notango Network		
Sketchbook locat	ttion:	
		Browse
Editor language:	English (English)	
Editor font size:	12	
Show verbose ou	utput during: 📝 compilation 🛛 upload	
Compiler warnin	ngs: None 👻	
📄 Display line :	numbers	
📄 Enable Code	e Folding	
🔽 Verify code	after upload	
📃 Use external	leditor	
🔽 Check for u	updates on startup	
📝 Update sketc	ch files to new extension on save (.pde -> .ino)	
📝 Save when v	verifying or uploading	
Additional Board	ds Manager URLs: https://github.com/ameba-arduino/ameba-arduino/raw/master/release/package_realtek.com_ameba_	_index.j: 🚺
More preferences	es can be edited directly in the file	
C:\Users\william_	1_lai'AppData'Local'Ard uino 1 5\preferences.txt	
(edit only when <i>l</i>	Arduino is not running)	
	OK	Cancel

填完之後按OK,然後因為改編輯器語言的關係,我們將Arduino IDE關掉之後重開。

接著準備選板子,到 "Tools" -> "Board" -> "Boards Manager"



在 "Boards Manager" 裡,它需要約十幾秒鐘整理所有 硬體檔案,如果網路狀況不好可能會等上數分鐘。每 當有新的硬體設定,我們需要重開 "Boards Manager",所以我們等一會兒之後,關掉 "Boards Manager",然後再打開它,將捲軸往下拉找到 "Realtek Ameba Boards",點右邊的Install,這時候

Arduino IDE就根據Ameba的設定檔開始下載Ameba所 需要的檔案:

9 Boards Manager	
Type All	
Intel 1686 Boards by Intel Boards included in this package: Edison. <u>More info</u>	
AMEL-Tech Boards by AMEL Technology Boards included in this package: SmartEverything Fox. Online help More info	
Realtek Ameba Boards (32-bits ARM Cortex-M3) by Realtek Boards included in this package: Ameba 81954M. Ameba 8711AM. Ameba 8711AF.	
Online help More info	Install
	Close

接著將板子選成Ameba,選取 "tools" -> "Board" -> "Arduino Ameba":

💿 sketch_dec03a   Ar	duino 1.6.6		_	
File Edit Sketch Too	ls Help			
Sketch_dec03a	Auto Format Archive Sketch Fix Encoding & Reload	Ctrl+T		
<pre>void setup() {     // put your se</pre>	Serial Monitor Serial Plotter	Ctrl+Shift+M Ctrl+Shift+L		
}	Board: "Arduino Ameba"	1		Boards Manager
<pre>void loop() {     // nut your ma </pre>	Port: "COM7" Programmer: "AVRISP mkII"	1		Arduino AVR Boards Arduino Yún
iii pav joar ma	Burn Bootloader			Arduino/Genuino Uno
}				Arduino Duemilanove or Diecimila
				Arduino Nano
				Arduino/Genuino Mega or Mega 2560
				Arduino Mega ADK
				Arduino Genuino Micro
				Arduino Esplora
				Arduino Mini
				Arduino Ethernet
				Arduino Fio
				Arduino BT
				LilyPad Arduino USB
				LilyPad Arduino
				Arduino Pro or Pro Mini
3		Arduino .		Arduino NG or older
				Arduino Robot Control
				Arduino Robot Motor
				Arduino Gemma
				Arduino AKIVI (32-bits) Boards
				Arduino Due (Programming Port)
				Amoba APM (22 bits) Reards
				Arduino Ameba
			-	Arduno Aneba

這樣開發環境就設定完成了。

# Try the First Example

**Step 1.** 編譯並上傳

Arduino IDE提供許多內建的範例,這些範例只要打開 經過編譯上傳之後就可以在板子上執行。我們先嘗試 Blink 範例。

打開 "File" -> "Examples" -> "01.Basics" -> "Blink"



選了 Blink 之後,Arduino IDE會打開另一個視窗,裡面已經有寫好的程式碼。

💿 Blink   Arduino 1.6.6
<u>File E</u> dit <u>Sketch T</u> ools <u>H</u> elp
Blink
/*
Blink
Turns on an LED on for one second, then off for one second, repeatedly.
Most Arduinos have an on-board LED you can control. On the Uno and
Leonardo, it is attached to digital pin 13. If you're unsure what
pin the on-board LED is connected to on your Arduino model, check
the addamentation at <u>http://www.aiaarho.cc</u>
This example code is in the public domain.
modified 8 May 2014
by Scott Fitzgerald
*/
// the setup function runs once when you press reset or power the board
Arduino Ameba on COM7

# 我們直接編譯這份程式碼,點選 "Sketch" ->

"Verify/Compile"

👳 Blink   Ardu	vino 1.6.6			×
File Edit Ske	tch Tools Help			
00	Verify/Compile	Ctrl+R		<b>)</b>
	Upload	Ctrl+U		
Blink	Upload Using Programmer	Ctrl+Shift+U	l i	•
/*	Export compiled Binary	Ctrl+Alt+S		
Blink	Show Sketch Folder	Ctrl+K	and reportedly	
Turns (	Include Library	•	econa, repeateary.	
Most A:	Add File		n the Uno and	
Leonardo, 1	it is attached to digital pi	n 13. 11 you re	unsure what	=
pin the on-	board LED is connected to o	n your Arduino	model, check	
the documer	ntation at <u>http://www.arduin</u>	0.00		
This exampl	le code is in the public dom	ain.		
modified 8	May 2014			
hy Scott Fi	itzgerald			
*/				
// the setup	function runs once when you	press reset or	power the board	-
			Arduino Ameba on COM	17

接著會看到 Arduino IDE 下方的訊息列出現一些訊息, 代表它正在編譯。編譯完成之後,會看到類似底下的 訊息。(沒有紅色訊息就代表沒問題)

Blink   Arduino 1.6.6	
Eile <u>E</u> dit <u>S</u> ketch <u>T</u> ools <u>H</u> elp	
🛇 📀 🛅 🔛 🖸 Open	
Blink	
/*	
Blink	
Turns on an LED on for one second, then off for one second,	repeatedly.
Most Arduinos have an on-board LED you can control. On the	Uno and
Leonardo, it is attached to digital pin 13. If you're unsur	e what ≡
pin the on-board LED is connected to on your Arduino model,	check
the documentation at <u>http://www.arduino.cc</u>	
This example code is in the public domain.	
modified 8 May 2014	
hv Scott Fitzgerald	
*/	
// the setup function runs once when you press reset or power	the board 👻
Done compiling	
Progrees (0)     (99 90)	
	<u> </u>
ketch uses 295,092 bytes (11%) of program storage space. Maxi	lmum is 2,499,639
	~
< <u>m</u>	Þ
Arduin	o Ameba on COM7

接著我們就可以上傳編譯好的程式碼到Ameba上面。 先確定Ameba跟電腦之間的線有接上,然後點選 "Sketch" -> "Upload"



接著訊息欄又開始印出一些訊息,這個步驟要等比較 久一點,大約要等數十秒到一分鐘,完成之後在訊息 欄會看到 "upload finish" 的訊息就代表上傳完成。

💿 Blink   Arduino 1.6.6	
<u>File Edit Sketch Tools H</u> elp	
	<mark>.0</mark>
Blink	
/*	<b>^</b>
Blink	
Turns on an LED on for one second, then off for one sec	ond, repeatedly.
Most Arduinos have an on-board LED you can control. Un	the Uno and
Leonardo, it is attached to digital pin 13. If you're u	insure what =
pin the on-board LED is connected to on your Arduino mo	del, check
the documentation at <u>http://www.arduino.cc</u>	
This success and is in the multiplanets	
inis example code is in the public domain.	
modified 8 May 2014	
by Scott Fitzgerald	
*/	
// the setup function runs once when you press reset or p	ower the board 🖉
Done uploading.	
copy C:\Users\william_lai\AppData\Local\Arduino15\packages	s\realtek\tools\ameba
複製了 1 個檔案。	
upload finish	=
	×
	rduine Ameha en COMZ
A	adding Ameda on COM/

Step 2. 測試 Blink 範例

Arduino不只提供許多範例,也提供每個範例的說明文件,包括如何接線,程式碼的說明,技術內容等等.....。這些範例不只是可以在Arduino的板子上使用,也可以在Ameba上面使用。 所以我們可以在Arduino網站上找到 Blink 的相關說明:

https://www.arduino.cc/en/Tutorial/Blink

簡單來說,Blink 這個讓 LED 燈泡閃爍,它使用的GPIO 接腳是13 Ameba的Pin一樣在D13的位置,根據Ameba的接腳位 置圖:



於是我們將電阻以及LED燈泡連接如下圖: (NOTE:LED裡,長腳的是正極,接到D13的地方, 短腳的是負極,接到GND的地方)



然後按一下Reset按鈕,就可以看到燈炮在閃爍,這個 實驗就完成了。 如果以上過程遇到問題,請參考Trouble-shooting 看 是否能解決。 Realtek IoT/Arduino Solution © 2016. All Rights Reserved. Powered by WordPress. Theme by Alx.